

AMENDMENTS TO THE CLAIMS:

Claims 1-27 (cancelled)

28. (New) A component mounting data generating method comprising:
preparing
- (i) component information about components to be placed onto a mounting target,
 - (ii) mounting target information about the mounting target, and
 - (iii) placement positional information of the components for the mounting target;
- preparing at least one condition out of
- (i) mounting apparatus conditions pertaining to
 - (a) a component feeding device, of a mounting apparatus, for feeding the components,
 - (b) a component holding member, of the mounting apparatus, for holding the components after being fed by the component feeding device,
 - (c) a component recognition device, of the mounting apparatus, for recognizing the components when held by the component holding member,
 - (d) a mounting target positioning device, of the mounting apparatus, for positioning the mounting target onto which the components held by the component holding member and recognized by the component recognition device are to be placed, and
 - (e) a head, of the mounting apparatus, having the component holding member and for moving the component holding member between the component feeding device, the component recognition device and the mounting target positioning device,
 - (ii) component holding conditions when the components, received from the component feeding device, are held by the component holding member,
 - (iii) recognizing conditions when the components held by the component holding member are recognized by the component recognition device,
 - (iv) placement conditions when the components held by the component holding member are to be placed onto the mounting target, and
 - (v) user mounting requesting conditions;

judging whether or not a mounting operation to be performed by the mounting apparatus is to be a strictly observed rule, which must be strictly observed and without observation of which the mounting operation cannot be performed, based on the component information, mounting target information, placement positional information and the at least one condition in view of productivity or quality assurance, to generate the strictly observed rule; and

generating data for performing the component mounting operation in consideration of the strictly observed rule when generated.

29. (New) The component mounting data generating method according to claim 28, further comprising:

judging whether or not the mounting operation to be performed by the mounting apparatus is to be a desirably observed rule, which is desirable to be observed, based on the component information, mounting target information, placement positional information and the at least one condition in view of prevention of lower productivity or lower quality, or in view of safety, to generate the desirably observed rule; and

generating data for performing the component mounting operation in consideration of the desirably observed rule when generated.

30. (New) The component mounting data generating method according to claim 29, wherein the mounting operation comprises at least one of

(i) a component holding operation when the components are held, after received from the component feeding device, by the component holding member,

(ii) a recognizing operation when the components held by the component holding member are recognized by the component recognition device, and

(iii) a placing operation when the components held by the component holding member are placed onto the mounting target.

31. (New) The component mounting data generating method according to claim 29, further comprising:

automatically determining a component mounting procedure of mounting operations for all the components to be mounted in consideration of at least one of the strictly observed rule and desirably observed rule, when generated, to generate component mounting data for performing the mounting operations.

32. (New) The component mounting data generating method according to claim 29, further comprising:

automatically dividing a component mounting procedure of mounting operations for all the components to be mounted into component groups in consideration of the strictly observed rule and desirably observed rule, when generated;

automatically dividing each of the component groups into operation units for the head based on the mounting apparatus conditions, component holding conditions, recognizing conditions, placement conditions, and user mounting requesting conditions; and

assuming the operation units as tasks, respectively, to examine mounting operations for each of the tasks, to then connect all of the tasks, and then to generate component mounting data for performing the component mounting operations.

33. (New) The component mounting data generating method according to claim 32, further comprising:

when each of the component groups is automatically divided into operation units for the head to generate the tasks, assuming one virtual mounting apparatus having a highest production capacity from the mounting apparatus conditions and the user mounting requesting conditions;

automatically dividing the component mounting procedure of mounting operations for all components to be mounted into operation units for one head of the virtual mounting apparatus;

examining mounting operations for each of the tasks, and then

connecting all of the tasks to generate component mounting data for performing the component mounting operations.

34. (New) The component mounting data generating method according to claim 32, further comprising:

when mounting operations are examined for each of the tasks, generating each of the tasks so that tasks for mounting components onto the mounting target are minimized, and then connecting all of the tasks to generate component mounting data for performing the component mounting operations.

35. (New) The component mounting data generating method according to claim 32, further comprising:

when mounting operations are examined for each of the tasks, judging whether or not there is a portion wherein the desirably observed rule, when generated, is not observed.

36. (New) The component mounting data generating method according to claim 35, further comprising:

when mounting operations are examined for each of the tasks and it is judged that there is a portion wherein the desirably observed rule, when generated, is not observed, simulating a mounting operation of the portion and judging whether or not the desirably observed rule, when generated, should be observed.

37. (New) The component mounting data generating method according to claim 36, wherein

judging whether or not the desirably observed rule, when generated, should be observed comprises judging whether or not the desirably observed rule, when generated, should be observed in view of shortening of a time required for performance of all of the tasks as a whole.

38. (New) The component mounting data generating method according to claim 29, wherein

the component information is information about the components to be placed onto the mounting target, including length, width and height of the components,

the mounting target information is information about the mounting target, including vertical and horizontal dimensions of the mounting target, and

the placement positional information is placement positional information pertaining to where the components are to be mounted on the mounting target.

39. (New) The component mounting data generating method according to claim 29, wherein

the mounting apparatus conditions include at least one condition out of

- (i) a number of mounting apparatuses,
- (ii) constitution of the head of each mounting apparatus,
- (iii) constitution of the component holding member of each head,
- (iv) constitution of component feeding cassettes of the component feeding device,
- (v) constitution of a tray feed unit of the component feeding device,
- (vi) constitution of cameras of the component recognition device, and
- (vii) constitution of a station for replacing the component holding member;

the component holding conditions includes at least one condition out of

- (i) component holding surface heights, and pitches of component holding members,
- (ii) pitches of component holding members,
- (iii) pitches of the component feeding cassettes of the component feeding device,
- (iv) a component holding method, and
- (v) rotation of a component before recognition of the component for positional

correction of the component before placement of the component on the mounting target;

the recognizing conditions include at least one condition out of

- (i) constitution of recognition cameras of the component recognition device,
- (ii) recognition surface heights of components,
- (iii) depth of field of cameras of the component recognition device, and
- (iv) component pitches;

the placement conditions include at least one condition out of

- (i) component placement order,

- (ii) whether shorter components are mounted first and then taller components are mounted,
 - (iii) whether taller components are mounted first and then shorter components are mounted,
 - (iv) whether components having small dimensions are mounted first and then components having large dimensions are mounted,
 - (v) whether components having large dimensions are mounted first and then components having small dimensions are mounted, and
 - (vi) arrangement of components on the mounting target; and
- the user mounting requesting conditions include at least one condition out of
- (i) a number of component holding members,
 - (ii) a number of component feeding cassettes,
 - (iii) component mounting order,
 - (iv) mounting order wherein shorter components are mounted first and then successively taller components are mounted, and
 - (v) order specification for specified components.

40. (New) The component mounting data generating method according to claim 29, wherein the strictly observed rule is based on the recognizing conditions and comprises at least one of the following rules:

- (i) a rule that a two-dimensional camera and a three-dimensional camera, or a large-sized three-dimensional camera and a small-sized three-dimensional camera, of the component recognition device cannot coexist for the head due to the a head moving speed for the two-dimensional camera being different than a head moving speed for the three-dimensional camera, and a head moving speed for the large-sized three-dimensional camera being different than a head moving speed for the small-sized three-dimensional camera;
- (ii) a rule that, during performance of one task using a two-dimensional camera of the component recognition device, components employed during the task must be limited so that a component height variation is at most 4 mm of a depth of field of the two-dimensional camera;

(iii) a rule that, since a kind and number of the component holding member allocated to the head can be varied, components to be placed during performance of one task must be determined based on resource information of the component holding member; and

(iv) a rule that, since a kind and number of a component feeding cassette feeder of the component feeding device can be varied, arrangement of component feeding cassette feeders must be determined based on resource information of the component feeding cassette feeder.

41. (New) The component mounting data generating method according to claim 29, wherein

when the strictly observed rule is based on the component holding conditions, the strictly observed rule is that, when components are simultaneously held by component holding members, components can be held only after being received from adjacent component feed units of the component feeding device, and

when the strictly observed rule is based on the user mounting requesting conditions, the strictly observed rule is that a maximum number of components that can be sucked during one sucking operation, as determined by the user mounting requesting conditions, is a number of nozzles disposed on the head.

42. (New) The component mounting data generating method according to claim 29, wherein the desirably observed rule is based on the placement conditions and comprises one of the following rules:

(i) a rule that components of at most 6 mm are desirably united with the head for performance of one task so as to speed up a placement operation; and

(ii) a rule that, to speed up a placement operation, it is desirable during performance of one task to not recognize components by a large-sized two-dimensional camera and a small-sized two-dimensional camera.

43. (New) The component mounting data generating method according to claim 29, wherein the desirably observed rule is based on the user mounting requesting conditions and is any one of:

- (i) a rule that a moving distance of the head is minimized,
- (ii) a rule that causes of lower productivity are minimized,
- (iii) a rule that mounting is started with shorter components, and
- (iv) a rule that a mounting order is determined so that component feeding cassettes of the component feeding device are not moved a large distance at once.

44. (New) A component mounting method comprising:
preparing

- (i) component information about components to be placed onto a mounting target,
 - (ii) mounting target information about the mounting target, and
 - (iii) placement positional information of the components for the mounting target;
- preparing at least one condition out of

- (i) mounting apparatus conditions pertaining to
 - (a) a component feeding device, of a mounting apparatus, for feeding the components,
 - (b) a component holding member, of the mounting apparatus, for holding the components after being fed by the component feeding device,
 - (c) a component recognition device, of the mounting apparatus, for recognizing the components when held by the component holding member,
 - (d) a mounting target positioning device, of the mounting apparatus, for positioning the mounting target onto which the components held by the component holding member and recognized by the component recognition device are to be placed, and
 - (e) a head, of the mounting apparatus, having the component holding member and for moving the component holding member between the component feeding device, the component recognition device and the mounting target positioning device,

(ii) component holding conditions when the components, received from the component feeding device, are held by the component holding member,

(iii) recognizing conditions when the components held by the component holding member are recognized by the component recognition device,

(iv) placement conditions when the components held by the component holding member are to be placed onto the mounting target, and

(v) user mounting requesting conditions;

judging whether or not a mounting operation to be performed by the mounting apparatus is to be a strictly observed rule, which must be strictly observed and without observation of which the mounting operation cannot be performed, based on the component information, mounting target information, placement positional information and the at least one condition in view of productivity or quality assurance, to generate the strictly observed rule;

judging whether or not the mounting operation to be performed by the mounting apparatus is to be a desirably observed rule, which is desirable to be observed, based on the component information, mounting target information, placement positional information and the at least one condition in view of prevention of lower productivity or lower quality, or in view of safety, to generate the desirably observed rule;

generating data in consideration of the strictly observed rule when generated;

generating data in consideration of the desirably observed rule when generated; and

performing the mounting operation based the data when generated.

45. (New) The component mounting data generating method according to claim 28, wherein the mounting operation comprises at least one of

(i) a component holding operation when the components are held, after received from the component feeding device, by the component holding member,

(ii) a recognizing operation when the components held by the component holding member are recognized by the component recognition device, and

(iii) a placing operation when the components held by the component holding member are placed onto the mounting target.

46. (New) The component mounting data generating method according to claim 28, further comprising:

automatically determining a component mounting procedure of mounting operations for all the components to be mounted in consideration of at least one of the strictly observed rule and desirably observed rule, when generated, to generate component mounting data for performing the mounting operations.

47. (New) The component mounting data generating method according to claim 28, further comprising:

automatically dividing a component mounting procedure of mounting operations for all the components to be mounted into component groups in consideration of the strictly observed rule and desirably observed rule, when generated;

automatically dividing each of the component groups into operation units for the head based on the mounting apparatus conditions, component holding conditions, recognizing conditions, placement conditions, and user mounting requesting conditions; and

assuming the operation units as tasks, respectively, to examine mounting operations for each of the tasks, to then connect all of the tasks, and then to generate component mounting data for performing the component mounting operations.

48. (New) The component mounting data generating method according to claim 47, further comprising:

when each of the component groups is automatically divided into operation units for the head to generate the tasks, assuming one virtual mounting apparatus having a highest production capacity from the mounting apparatus conditions and the user mounting requesting conditions;

automatically dividing the component mounting procedure of mounting operations for all components to be mounted into operation units for one head of the virtual mounting apparatus;

examining mounting operations for each of the tasks, and then

connecting all of the tasks to generate component mounting data for performing the component mounting operations.

49. (New) The component mounting data generating method according to claim 47, further comprising:

when mounting operations are examined for each of the tasks, generating each of the tasks so that tasks for mounting components onto the mounting target are minimized, and then connecting all of the tasks to generate component mounting data for performing the component mounting operations.

50. (New) The component mounting data generating method according to claim 47, further comprising:

when mounting operations are examined for each of the tasks, judging whether or not there is a portion wherein the desirably observed rule, when generated, is not observed.

51. (New) The component mounting data generating method according to claim 50, further comprising:

when mounting operations are examined for each of the tasks and it is judged that there is a portion wherein the desirably observed rule, when generated, is not observed, simulating a mounting operation of the portion and judging whether or not the desirably observed rule, when generated, should be observed.

52. (New) The component mounting data generating method according to claim 51, wherein

judging whether or not the desirably observed rule, when generated, should be observed comprises judging whether or not the desirably observed rule, when generated, should be observed in view of shortening of a time required for performance of all of the tasks as a whole.

53. (New) The component mounting data generating method according to claim 28, wherein

the component information is information about the components to be placed onto the mounting target, including length, width and height of the components,

the mounting target information is information about the mounting target, including vertical and horizontal dimensions of the mounting target, and

the placement positional information is placement positional information pertaining to where the components are to be mounted on the mounting target.

54. (New) The component mounting data generating method according to claim 28, wherein

the mounting apparatus conditions include at least one condition out of

- (i) a number of mounting apparatuses,
- (ii) constitution of the head of each mounting apparatus,
- (iii) constitution of the component holding member of each head,
- (iv) constitution of component feeding cassettes of the component feeding device,
- (v) constitution of a tray feed unit of the component feeding device,
- (vi) constitution of cameras of the component recognition device, and
- (vii) constitution of a station for replacing the component holding member;

the component holding conditions includes at least one condition out of

- (i) component holding surface heights, and pitches of component holding members,
- (ii) pitches of component holding members,
- (iii) pitches of the component feeding cassettes of the component feeding device,
- (iv) a component holding method, and
- (v) rotation of a component before recognition of the component for positional

correction of the component before placement of the component on the mounting target;

the recognizing conditions include at least one condition out of

- (i) constitution of recognition cameras of the component recognition device,
- (ii) recognition surface heights of components,
- (iii) depth of field of cameras of the component recognition device, and
- (iv) component pitches;

the placement conditions include at least one condition out of

- (i) component placement order,

(ii) whether shorter components are mounted first and then taller components are mounted,

(iii) whether taller components are mounted first and then shorter components are mounted,

(iv) whether components having small dimensions are mounted first and then components having large dimensions are mounted,

(v) whether components having large dimensions are mounted first and then components having small dimensions are mounted, and

(vi) arrangement of components on the mounting target; and
the user mounting requesting conditions include at least one condition out of

(i) a number of component holding members,

(ii) a number of component feeding cassettes,

(iii) component mounting order,

(iv) mounting order wherein shorter components are mounted first and then successively taller components are mounted, and

(v) order specification for specified components.

55. (New) The component mounting data generating method according to claim 28, wherein the strictly observed rule is based on the recognizing conditions and comprises at least one of the following rules:

(i) a rule that a two-dimensional camera and a three-dimensional camera, or a large-sized three-dimensional camera and a small-sized three-dimensional camera, of the component recognition device cannot coexist for the head due to the a head moving speed for the two-dimensional camera being different than a head moving speed for the three-dimensional camera, and a head moving speed for the large-sized three-dimensional camera being different than a head moving speed for the small-sized three-dimensional camera;

(ii) a rule that, during performance of one task using a two-dimensional camera of the component recognition device, components employed during the task must be limited so that a component height variation is at most 4 mm of a depth of field of the two-dimensional camera;

(iii) a rule that, since a kind and number of the component holding member allocated to the head can be varied, components to be placed during performance of one task must be determined based on resource information of the component holding member; and

(iv) a rule that, since a kind and number of a component feeding cassette feeder of the component feeding device can be varied, arrangement of component feeding cassette feeders must be determined based on resource information of the component feeding cassette feeder.

56. (New) The component mounting data generating method according to claim 28, wherein

when the strictly observed rule is based on the component holding conditions, the strictly observed rule is that, when components are simultaneously held by component holding members, components can be held only after being received from adjacent component feed units of the component feeding device, and

when the strictly observed rule is based on the user mounting requesting conditions, the strictly observed rule is that a maximum number of components that can be sucked during one sucking operation, as determined by the user mounting requesting conditions, is a number of nozzles disposed on the head.

57. (New) A component mounting method comprising:
preparing

- (i) component information about components to be placed onto a mounting target,
- (ii) mounting target information about the mounting target, and
- (iii) placement positional information of the components for the mounting target;

preparing at least one condition out of

- (i) mounting apparatus conditions pertaining to

(a) a component feeding device, of a mounting apparatus, for feeding the components,

(b) a component holding member, of the mounting apparatus, for holding the components after being fed by the component feeding device,

(c) a component recognition device, of the mounting apparatus, for recognizing the components when held by the component holding member,

(d) a mounting target positioning device, of the mounting apparatus, for positioning the mounting target onto which the components held by the component holding member and recognized by the component recognition device are to be placed, and

(e) a head, of the mounting apparatus, having the component holding member and for moving the component holding member between the component feeding device, the component recognition device and the mounting target positioning device,

(ii) component holding conditions when the components, received from the component feeding device, are held by the component holding member,

(iii) recognizing conditions when the components held by the component holding member are recognized by the component recognition device,

(iv) placement conditions when the components held by the component holding member are to be placed onto the mounting target, and

(v) user mounting requesting conditions;

judging whether or not a mounting operation to be performed by the mounting apparatus is to be a strictly observed rule, which must be strictly observed and without observation of which the mounting operation cannot be performed, based on the component information, mounting target information, placement positional information and the at least one condition in view of productivity or quality assurance, to generate the strictly observed rule;

generating data in consideration of the strictly observed rule when generated; and

performing the mounting operation based the data when generated.

58. (New) A component mounting data generating method comprising:
preparing

(i) component information about components to be placed onto a mounting target,

(ii) mounting target information about the mounting target, and

(iii) placement positional information of the components for the mounting target;

preparing at least one condition out of

(i) mounting apparatus conditions pertaining to

(a) a component feeding device, of a mounting apparatus, for feeding the components,

(b) a component holding member, of the mounting apparatus, for holding the components after being fed by the component feeding device,

(c) a component recognition device, of the mounting apparatus, for recognizing the components when held by the component holding member,

(d) a mounting target positioning device, of the mounting apparatus, for positioning the mounting target onto which the components held by the component holding member and recognized by the component recognition device are to be placed, and

(e) a head, of the mounting apparatus, having the component holding member and for moving the component holding member between the component feeding device, the component recognition device and the mounting target positioning device,

(ii) component holding conditions when the components, received from the component feeding device, are held by the component holding member,

(iii) recognizing conditions when the components held by the component holding member are recognized by the recognition device,

(iv) placement conditions when the components held by the component holding member are to be placed onto the mounting target, and

(v) user mounting requesting conditions;

judging whether or not a mounting operation to be performed by the mounting apparatus is to be a desirably observed rule, which is desirable to be observed, based on the component information, mounting target information, placement positional information and the at least one condition in view of prevention of lower productivity or lower quality, or in view of safety, to generate the desirably observed rule; and

generating data for performing the component mounting operation in consideration of the desirably observed rule when generated.

59. (New) The component mounting data generating method according to claim 58, wherein the mounting operation comprises at least one of

(i) a component holding operation when the components are held, after received from the component feeding device, by the component holding member,

(ii) a recognizing operation when the components held by the component holding member are recognized by the component recognition device, and

(iii) a placing operation when the components held by the component holding member are placed onto the mounting target.

60. (New) The component mounting data generating method according to claim 58, further comprising:

automatically determining a component mounting procedure of mounting operations for all the components to be mounted in consideration of at least one of the strictly observed rule and desirably observed rule, when generated, to generate component mounting data for performing the mounting operations.

61. (New) The component mounting data generating method according to claim 58, further comprising:

automatically dividing a component mounting procedure of mounting operations for all the components to be mounted into component groups in consideration of the strictly observed rule and desirably observed rule, when generated;

automatically dividing each of the component groups into operation units for the head based on the mounting apparatus conditions, component holding conditions, recognizing conditions, placement conditions, and user mounting requesting conditions; and

assuming the operation units as tasks, respectively, to examine mounting operations for each of the tasks, to then connect all of the tasks, and then to generate component mounting data for performing the component mounting operations.

62. (New) The component mounting data generating method according to claim 61, further comprising:

when each of the component groups is automatically divided into operation units for the head to generate the tasks, assuming one virtual mounting apparatus having a highest production capacity from the mounting apparatus conditions and the user mounting requesting conditions;

automatically dividing the component mounting procedure of mounting operations for all components to be mounted into operation units for one head of the virtual mounting apparatus;

examining mounting operations for each of the tasks, and then

connecting all of the tasks to generate component mounting data for performing the component mounting operations.

63. (New) The component mounting data generating method according to claim 61, further comprising:

when mounting operations are examined for each of the tasks, generating each of the tasks so that tasks for mounting components onto the mounting target are minimized, and then connecting all of the tasks to generate component mounting data for performing the component mounting operations.

64. (New) The component mounting data generating method according to claim 61, further comprising:

when mounting operations are examined for each of the tasks, judging whether or not there is a portion wherein the desirably observed rule, when generated, is not observed.

65. (New) The component mounting data generating method according to claim 64, further comprising:

when mounting operations are examined for each of the tasks and it is judged that there is a portion wherein the desirably observed rule, when generated, is not observed, simulating a mounting operation of the portion and judging whether or not the desirably observed rule, when generated, should be observed.

66. (New) The component mounting data generating method according to claim 65, wherein

judging whether or not the desirably observed rule, when generated, should be observed comprises judging whether or not the desirably observed rule, when generated, should be observed in view of shortening of a time required for performance of all of the tasks as a whole.

67. (New) The component mounting data generating method according to claim 58, wherein

the component information is information about the components to be placed onto the mounting target, including length, width and height of the components,

the mounting target information is information about the mounting target, including vertical and horizontal dimensions of the mounting target, and

the placement positional information is placement positional information pertaining to where the components are to be mounted on the mounting target.

68. (New) The component mounting data generating method according to claim 58, wherein

the mounting apparatus conditions include at least one condition out of

- (i) a number of mounting apparatuses,
- (ii) constitution of the head of each mounting apparatus,
- (iii) constitution of the component holding member of each head,
- (iv) constitution of component feeding cassettes of the component feeding device,
- (v) constitution of a tray feed unit of the component feeding device,
- (vi) constitution of cameras of the component recognition device, and
- (vii) constitution of a station for replacing the component holding member;

the component holding conditions includes at least one condition out of

- (i) component holding surface heights, and pitches of component holding members,
- (ii) pitches of component holding members,
- (iii) pitches of the component feeding cassettes of the component feeding device,

(iv) a component holding method, and

(v) rotation of a component before recognition of the component for positional correction of the component before placement of the component on the mounting target;

the recognizing conditions include at least one condition out of

- (i) constitution of recognition cameras of the component recognition device,
- (ii) recognition surface heights of components,
- (iii) depth of field of cameras of the component recognition device, and
- (iv) component pitches;

the placement conditions include at least one condition out of

- (i) component placement order,
- (ii) whether shorter components are mounted first and then taller components are mounted,
- (iii) whether taller components are mounted first and then shorter components are mounted,
- (iv) whether components having small dimensions are mounted first and then components having large dimensions are mounted,
- (v) whether components having large dimensions are mounted first and then components having small dimensions are mounted, and
- (vi) arrangement of components on the mounting target; and

the user mounting requesting conditions include at least one condition out of

- (i) a number of component holding members,
- (ii) a number of component feeding cassettes,
- (iii) component mounting order,
- (iv) mounting order wherein shorter components are mounted first and then successively taller components are mounted, and
- (v) order specification for specified components.

69. (New) The component mounting data generating method according to claim 58, wherein the desirably observed rule is based on the placement conditions and comprises one of the following rules:

(i) a rule that components of at most 6 mm are desirably united with the head for performance of one task so as to speed up a placement operation; and

(ii) a rule that, to speed up a placement operation, it is desirable during performance of one task to not recognize components by a large-sized two-dimensional camera and a small-sized two-dimensional camera.

70. (New) The component mounting data generating method according to claim 58, wherein the desirably observed rule is based on the user mounting requesting conditions and is any one of:

(i) a rule that a moving distance of the head is minimized,

(ii) a rule that causes of lower productivity are minimized,

(iii) a rule that mounting is started with shorter components, and

(iv) a rule that a mounting order is determined so that component feeding cassettes of the component feeding device are not moved a large distance at once.

71. (New) A component mounting method comprising:
preparing

(i) component information about components to be placed onto a mounting target,

(ii) mounting target information about the mounting target, and

(iii) placement positional information of the components for the mounting target;

preparing at least one condition out of

(i) mounting apparatus conditions pertaining to

(a) a component feeding device, of a mounting apparatus, for feeding the components,

(b) a component holding member, of the mounting apparatus, for holding the components after being fed by the component feeding device,

(c) a component recognition device, of the mounting apparatus, for recognizing the components when held by the component holding member,

(d) a mounting target positioning device, of the mounting apparatus, for positioning the mounting target onto which the components held by the component holding member and recognized by the component recognition device are to be placed, and

(e) a head, of the mounting apparatus, having the component holding member and for moving the component holding member between the component feeding device, the component recognition device and the mounting target positioning device,

(ii) component holding conditions when the components, received from the component feeding device, are held by the component holding member,

(iii) recognizing conditions when the components held by the component holding member are recognized by the recognition device,

(iv) placement conditions when the components held by the component holding member are to be placed onto the mounting target, and

(v) user mounting requesting conditions;

judging whether or not a mounting operation to be performed by the mounting apparatus is to be a desirably observed rule, which is desirable to be observed, based on the component information, mounting target information, placement positional information and the at least one condition in view of prevention of lower productivity or lower quality, or in view of safety, to generate the desirably observed rule;

generating data in consideration of the desirably observed rule when generated; and
performing the mounting operation based on the data when generated.